Amendments to the Claims:

This listing of claims will replace all prior version, and listings, of claims in the application:

Listing of Claims:

1-7. (Canceled).

8. (New) A control system for controlling a controlled variable, comprising:

a setpoint value preselecting device for preselecting at least one setpoint value (y_d) for the controlled variable (y);

a control device for implementing the at least one setpoint value (y_d) into at least one manipulated variable (u_d); and

a controlled system of one of an air path system of an internal combustion engine, an injection system, an engine speed regulation system, and a torque regulation system for controlling the controlled variable (y) at its output in response to the at least one manipulated variable (u_d) so that the controlled variable (y) is adjusted to a setpoint value (y_d);

wherein the functional response of the controlled system and the control device are represented by separate models in each case and the model for the control device corresponds to the inverse of the model for the controlled system, and

wherein the model for the control device is formed by:

preselecting a model representing the functional response of the controlled system with N state variables (x_i) in N differential equations, one of the state variables (x_i, where i = 1, ..., N) representing the controlled variable (y); and

generating the model for the control device by inverting the model for the controlled system, the inversion including:

forming the derivatives of the n^{th} order $\left(\dot{y}, \ddot{y}, ..., \overset{(N)}{y}\right)$ for the controlled variable (y) using the differential equations, and

solving the equation system that is forming of the derivatives of the n^{th} order $\left(\dot{y}, \ddot{y}, ..., \overset{(N)}{y}\right)$ by forming an equation for the N^{th} derivative for the controlled variable as a function of the manipulated variable and at least one of the controlled variable itself and its derivatives of the n^{th} order with respect to time where

n`= 1, ..., N-1; and

generating the model for the control device by solving the equation for the N^{th} derivative of the controlled variable for the manipulated variable.

9. (New) The control system of claim 8, wherein the model for the control device is also formed by performing the following to determine the N^{th} derivative of the controlled variable:

selecting one of the state variables (x_i where i = 1, ..., N) as the controlled variable (y);

calculating the 1st, 2nd, . . . through N^{th} derivative $\left(\dot{y}, \ddot{y}, ..., \overset{(N)}{y}\right)$ of the controlled variable (y) with respect to time as a function of the state variables (x_i);

calculating each of the individual state variables (x_i where i = 1, ..., N) as a function of the controlled variable and/or its derivatives $\left(\dot{y}, \ddot{y}, ..., \overset{(N-1)}{y}\right)$ with respect to time by rewriting the equations for the derivatives of the controlled variable;

rewriting the N^{th} derivative of the controlled variable (y) by eliminating all state variables (x_i) in the N^{th} derivative ($\overset{(N)}{y}$) of the controlled variable by replacing these state variables (x_i) there by their corresponding functions as a function of at least one of the controlled variable (y) and its time derivative of the 1st, ..., $(N - 1)^{th}$ order $\left(\dot{y}, \ddot{y}, ..., \overset{(N-1)}{y}\right)$; and

generating the model for the control device (120) by solving the rewritten N^{th} derivative ($\overset{(N)}{y}$) of the controlled variable (y) for the manipulated variable (u_d).

10. (New) The control system of claim 8, wherein the model of the controlled system maps the functional response of the controlled system with the model equations only inasmuch as this the response is relevant for a control of the controlled variable.

11. (New) A regulating system for regulating a controlled variable, comprising:

a control system for controlling a controlled variable, including:

a setpoint value preselecting device for preselecting at least one setpoint value (y_d) for the controlled variable (y);

a control device for implementing the at least one setpoint value (y_d) into at least one manipulated variable (u_d); and

a controlled system of one of an air path system of an internal combustion

engine, an injection system, an engine speed regulation system, and a torque regulation system for controlling the controlled variable (y) at its output in response to the at least one manipulated variable (u_d) so that the controlled variable (y) is adjusted to a setpoint value (y_d);

wherein the functional response of the controlled system and the control device are represented by separate models in each case and the model for the control device corresponds to the inverse of the model for the controlled system, and

wherein the model for the control device is formed by:

preselecting a model representing the functional response of the controlled system with N state variables (x_i) in N differential equations, one of the state variables (x_i, where i = 1, ..., N) representing the controlled variable (y); and

generating the model for the control device by inverting the model for the controlled system, the inversion including:

forming the derivatives of the n^{th} order $\left(\dot{y}, \ddot{y}, ..., \overset{(N)}{y}\right)$ for the controlled variable (y) using the differential equations, and

solving the equation system that is forming of the derivatives of the n^{th} order $\left(\dot{y}, \ddot{y}, ..., \overset{(N)}{y}\right)$ by forming an equation for the N^{th} derivative for the controlled variable as a function of the manipulated variable and at least one of the controlled variable itself and its derivatives of the n^{th} order with respect to time where n = 1, ..., N-1; and

generating the model for the control device by solving the equation for the N^{th} derivative of the controlled variable for the manipulated variable;

a regulating device for determining a correction factor (u_{ctrl}) for the manipulated variable from a received control deviation (e) between the controlled variable (y) at the output of the controlled system and the setpoint value (y_d); and

at least one of an addition device and a subtraction device for calculating a corrected manipulated variable (u) for the controlled system by adding the correction factor (u_{ctrl}) for the manipulated variable to the manipulated variable (u_d) calculated by the control device.

12. (New) The control system of claim 8, wherein the setpoint value preselecting device for preselecting the at least one setpoint value (y_d) for the controlled variable (y), in the form of a

trajectory sequence.

13. (New) The control system of claim 9, wherein the determining of the 1st, 2nd, ... through N^{th} derivative $\left(\dot{y}, \ddot{y}, ..., \overset{(N)}{y} \right)$ of the controlled variable (y) for time is done as the function of the state variables (x_i) and the manipulated variable (u_d).